Name: Date:

s19 Matrix Exam (practice v101)

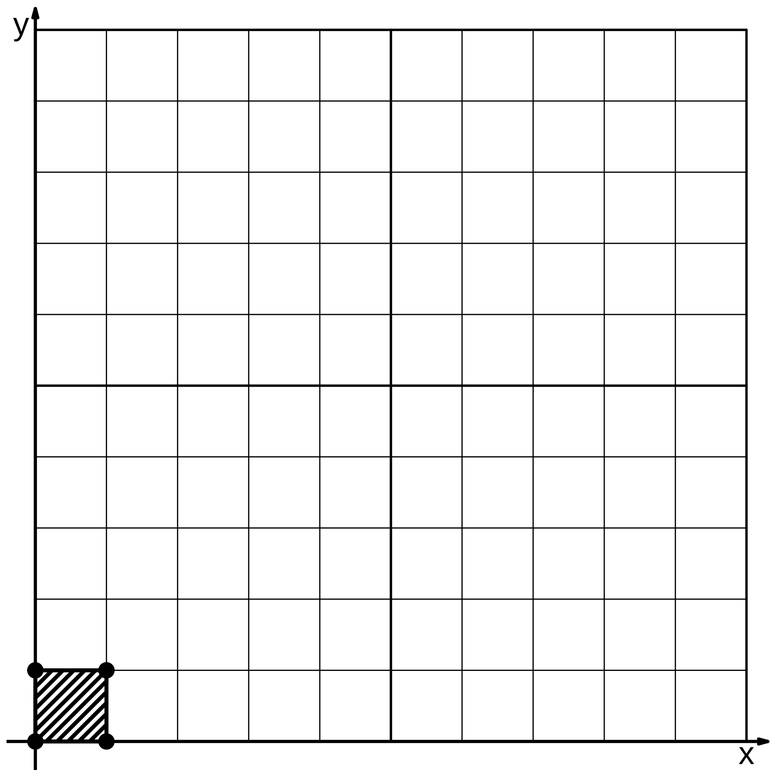
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 5 & 1 \\ 4 & 6 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
5	1				
4	6				

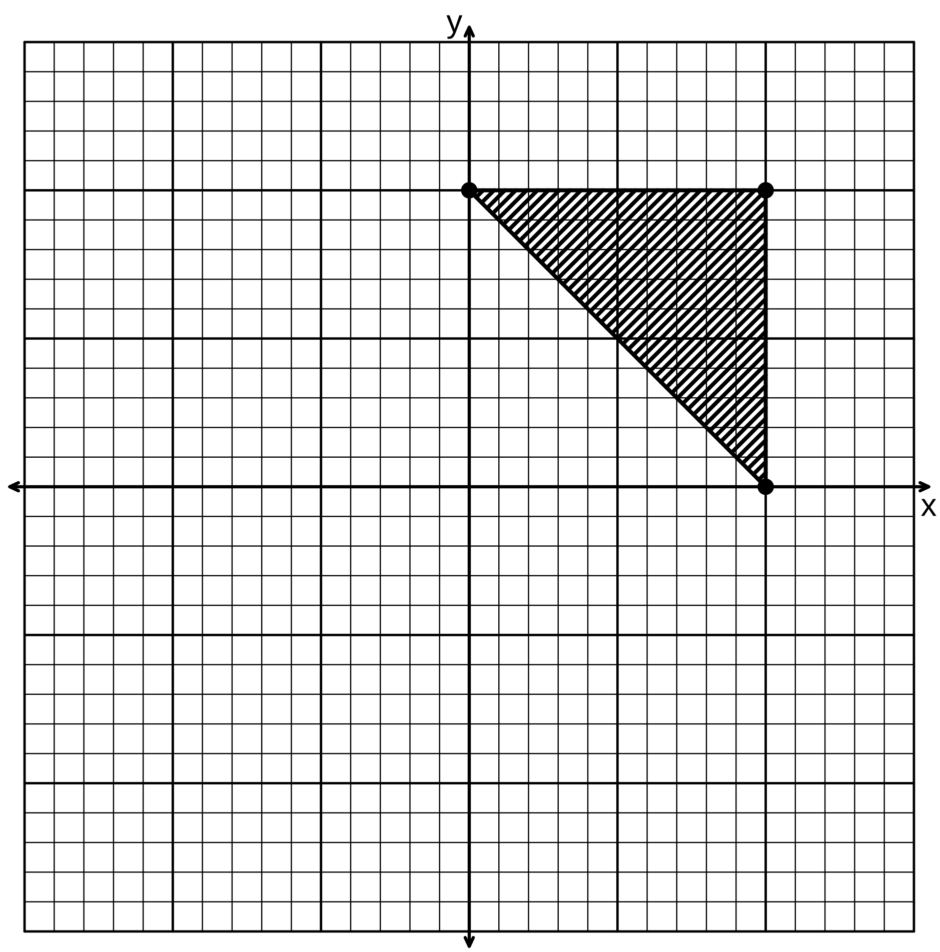


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 10 & 0 & 10 \\ 10 & 10 & 0 \end{bmatrix}$. In order to reflect over the x axis and then rotate by 233.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.6 & -0.8 \\ -0.8 & 0.6 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v102)

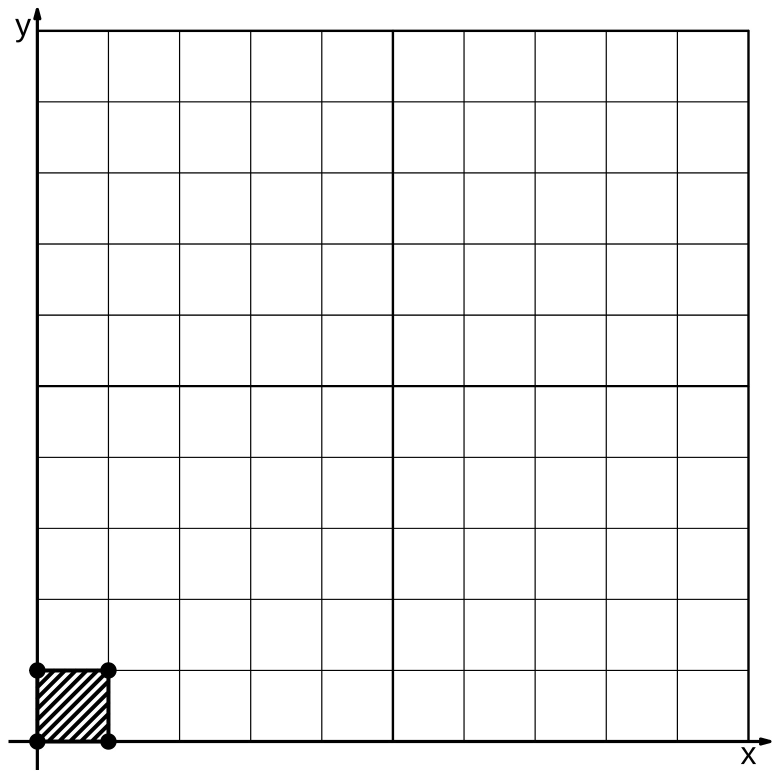
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 3 & 5 \\ 1 & 7 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
3	5				
1	7				

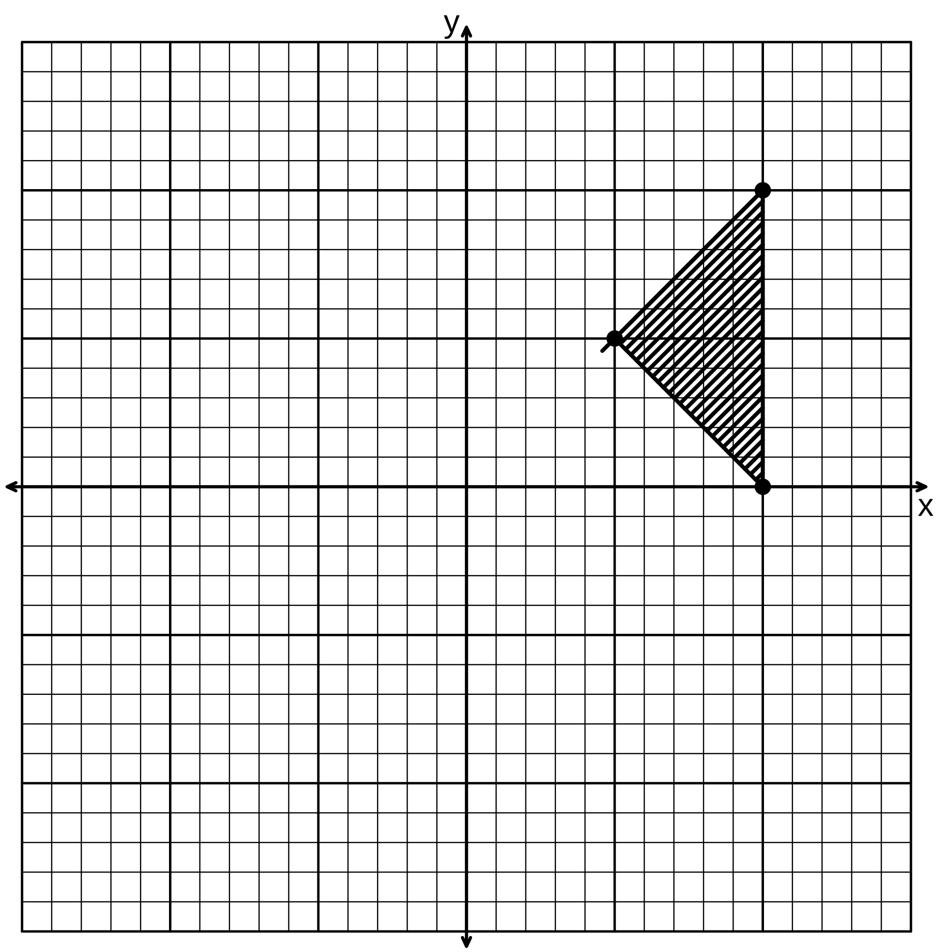


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 10 & 5 & 10 \\ 0 & 5 & 10 \end{bmatrix}$. In order to reflect over the y axis and then rotate by 36.87° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.8 & -0.6 \\ -0.6 & 0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v103)

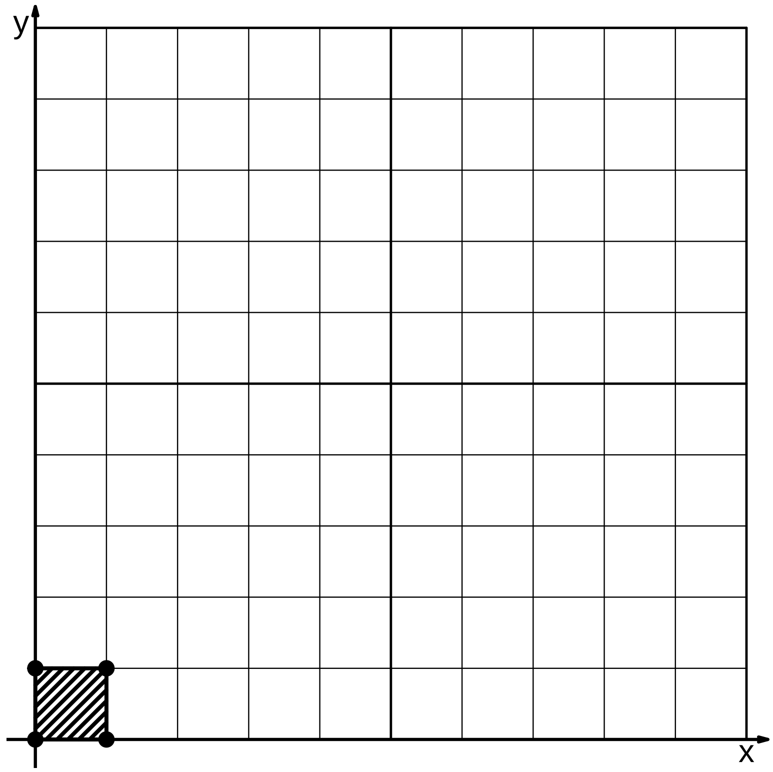
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 5 & 1 \\ 3 & 6 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
5	1				
3	6				

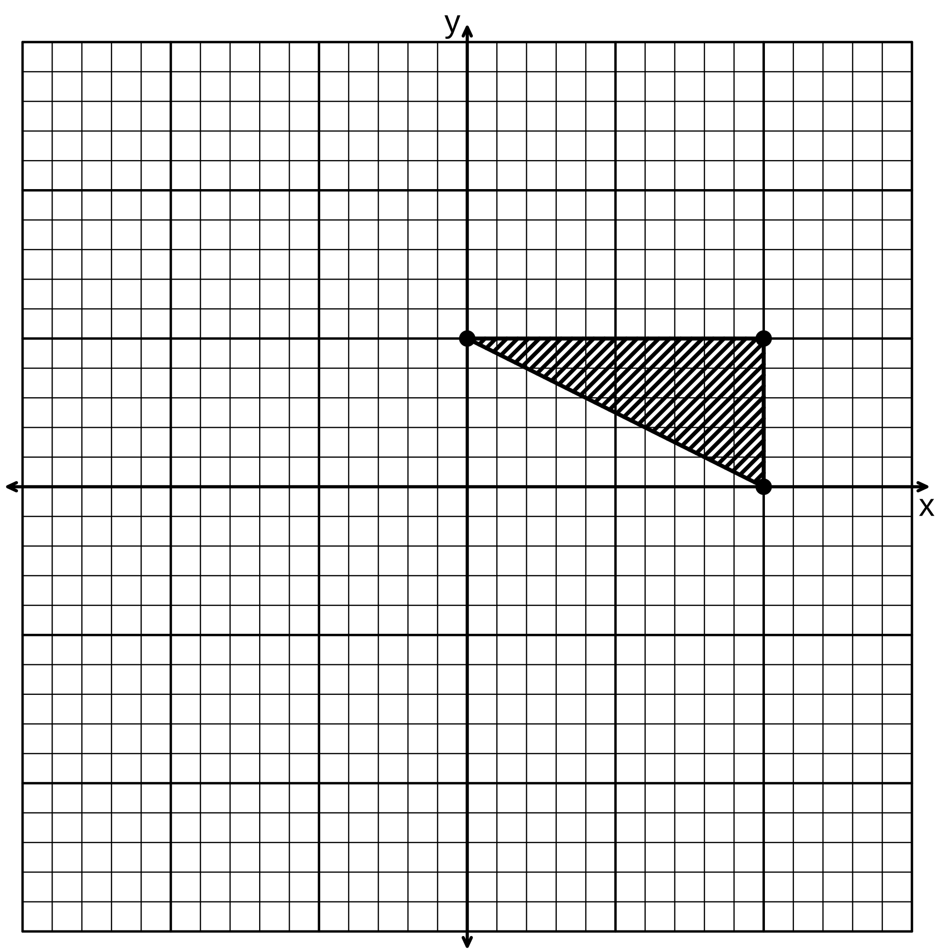


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 10 & 0 & 10 \\ 5 & 5 & 0 \end{bmatrix}$. In order to reflect over the x axis and then rotate by 323.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} 0.8 & -0.6 \\ -0.6 & -0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v104)

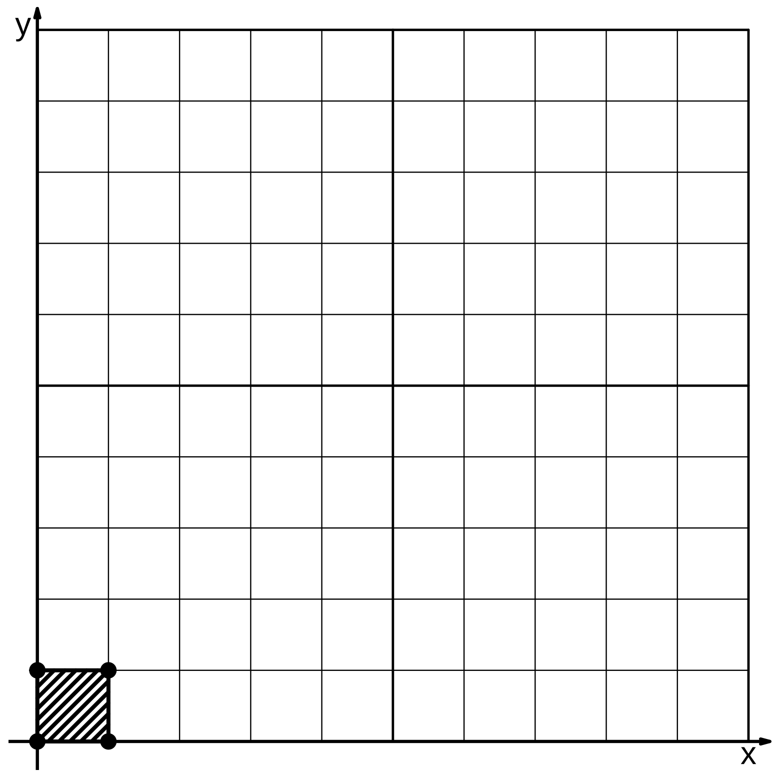
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 4 & 2 \\ 1 & 6 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
4	2				
1	6				

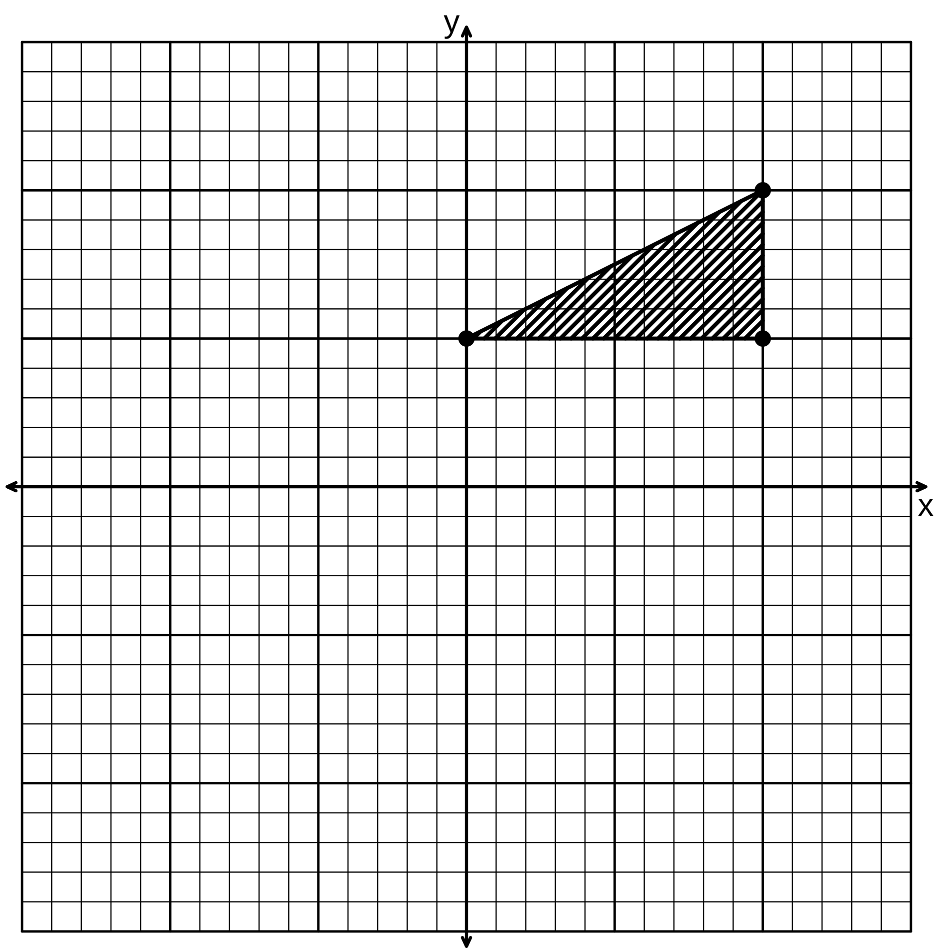


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 0 & 10 & 10 \\ 5 & 10 & 5 \end{bmatrix}$. In order to reflect over the y axis and then rotate by 36.87° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.8 & -0.6 \\ -0.6 & 0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v105)

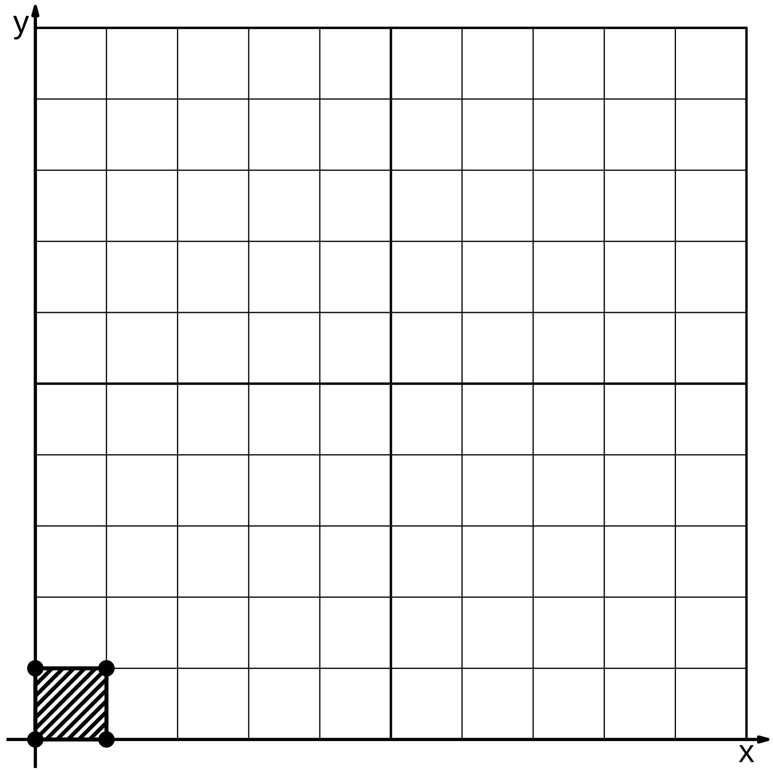
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 7 & 1 \\ 5 & 2 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
7	1				
5	2				

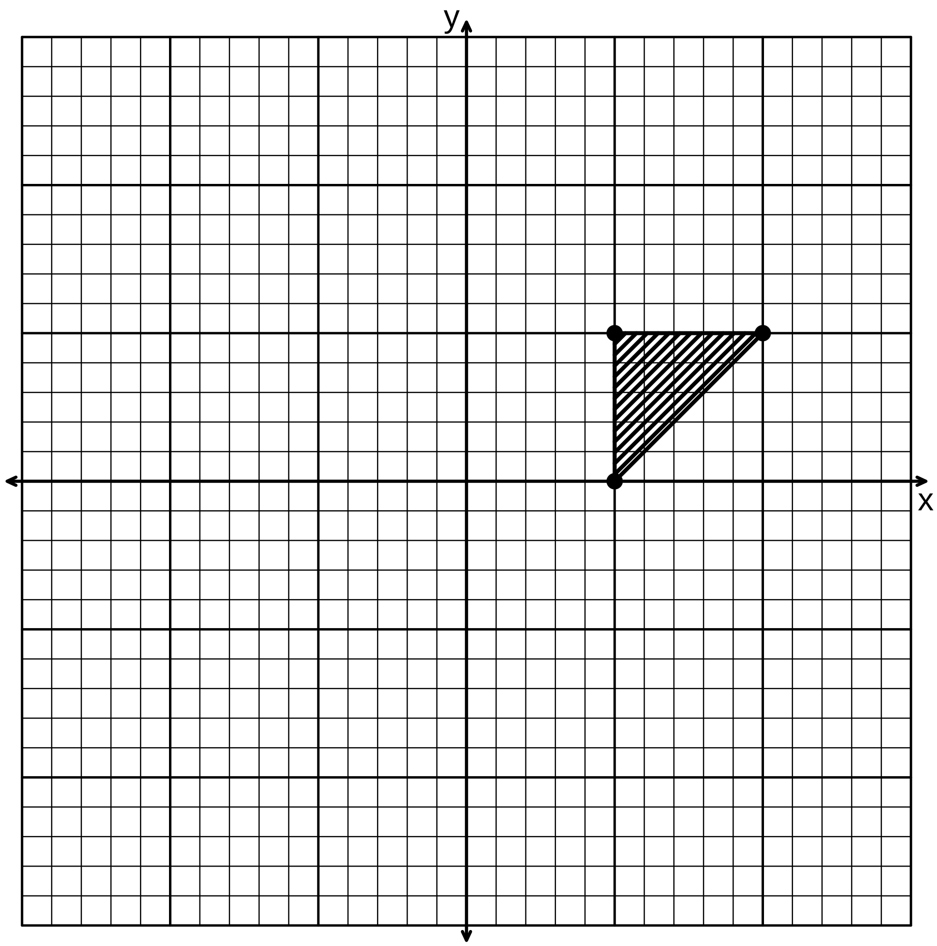


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 5 & 5 & 10 \\ 5 & 0 & 5 \end{bmatrix}$. In order to reflect over the x axis and then rotate by 233.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.6 & -0.8 \\ -0.8 & 0.6 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v106)

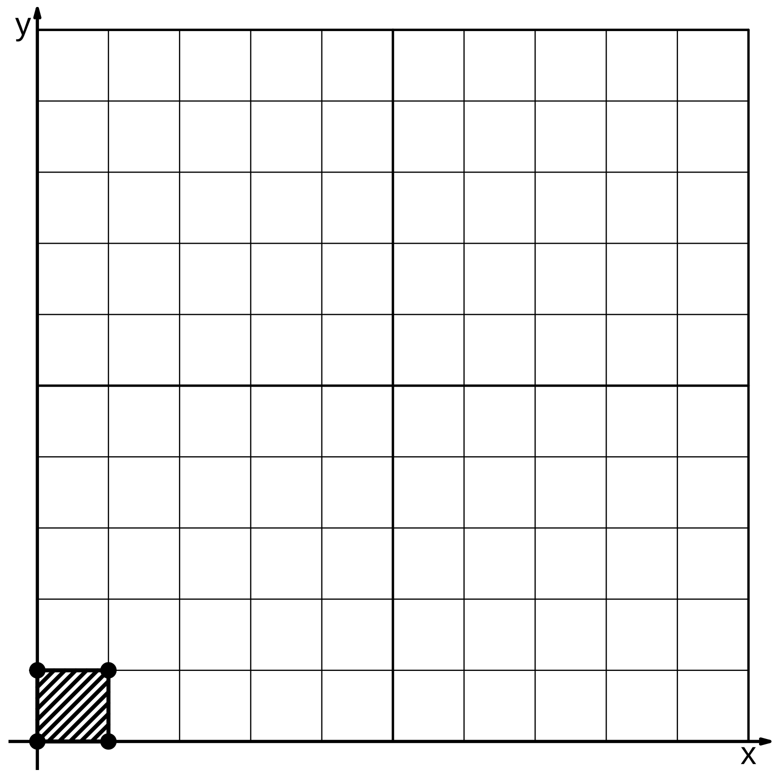
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 6 & 3 \\ 1 & 7 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
6	3				
1	7				

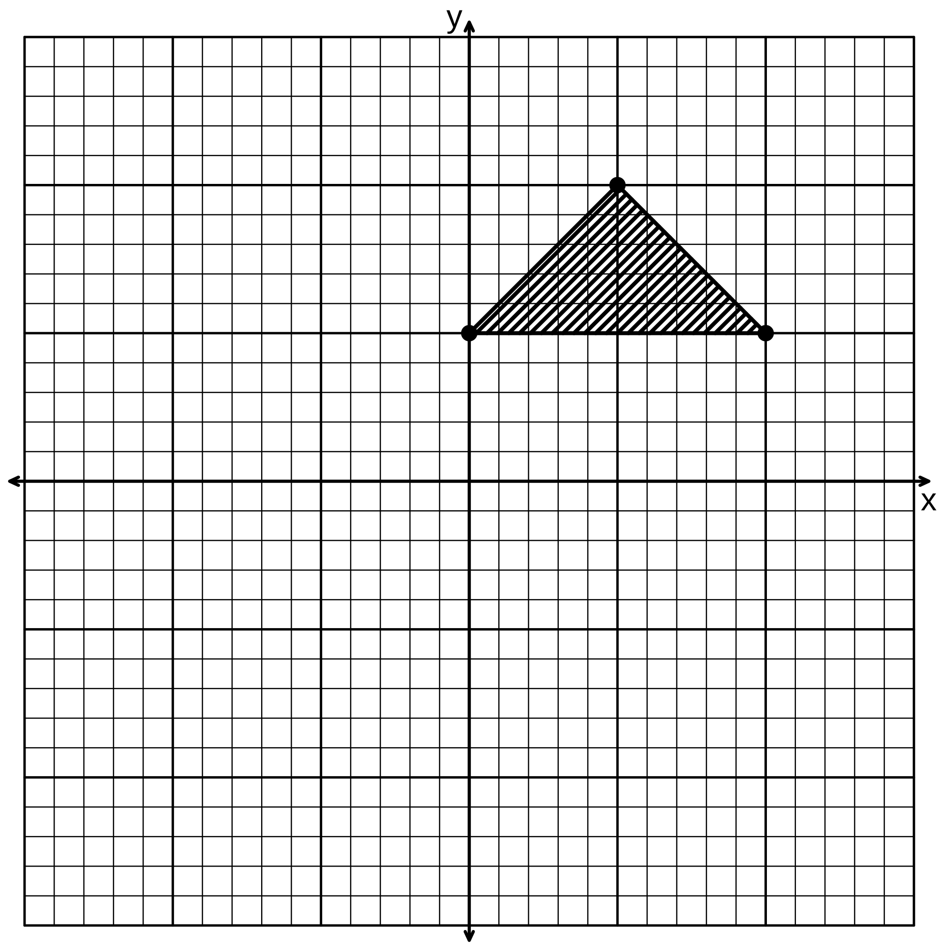


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 5 & 10 & 0 \\ 10 & 5 & 5 \end{bmatrix}$. In order to reflect over the x axis, reflect over the y axis, and then rotate by 323.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.8 & -0.6 \\ 0.6 & -0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v107)

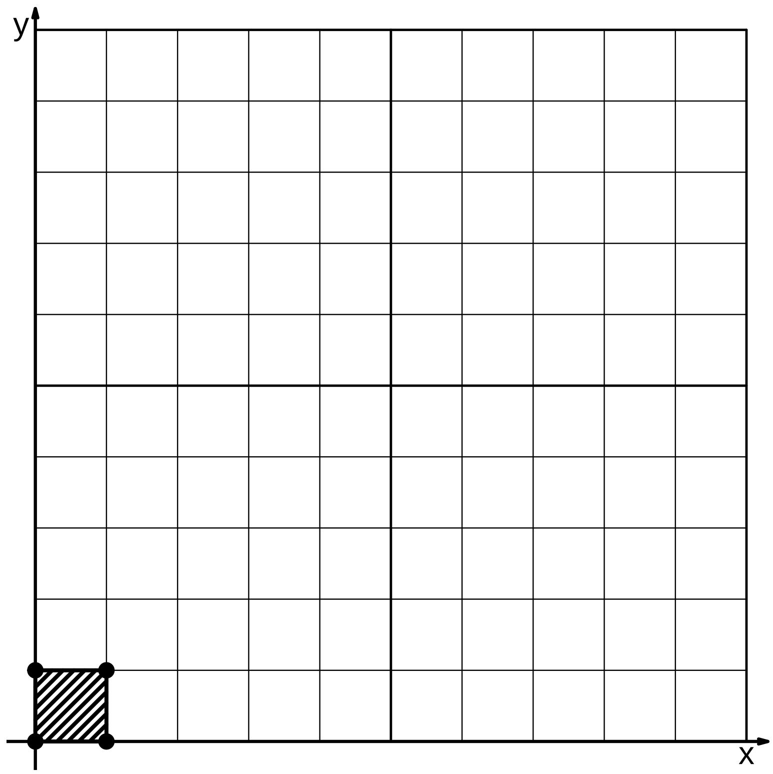
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 5 & 4 \\ 1 & 7 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
5	4				
1	7				

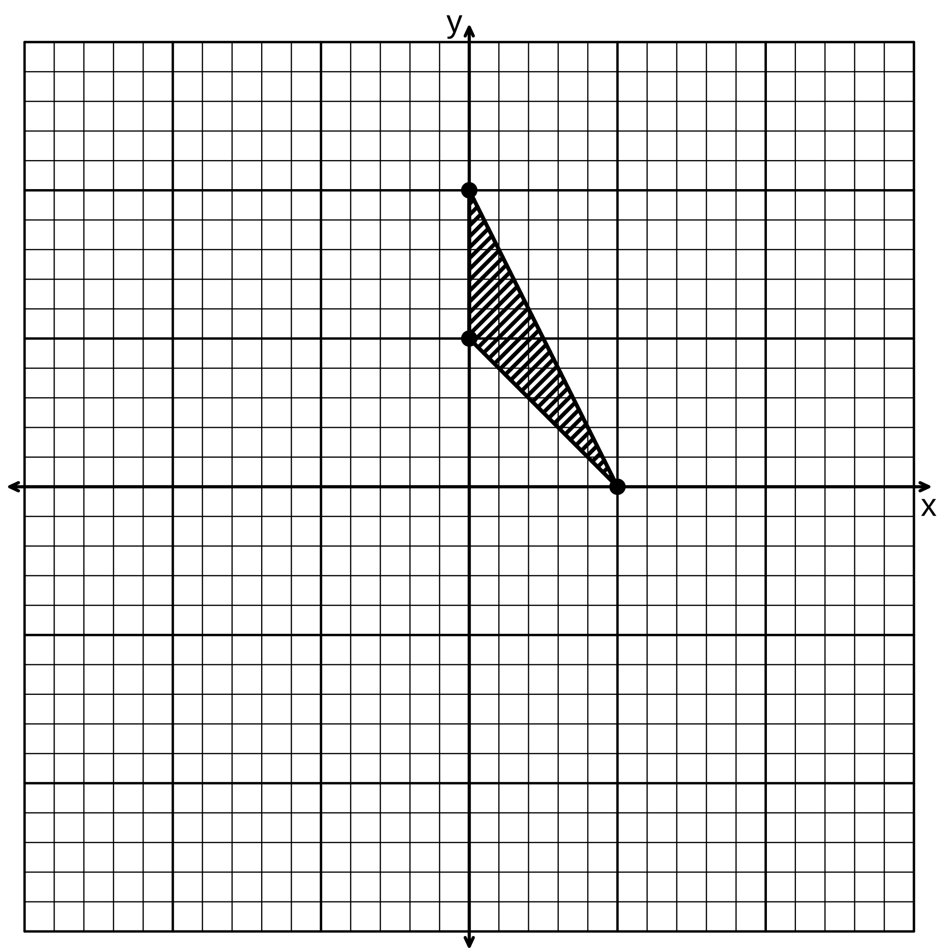


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 0 & 5 & 0 \\ 5 & 0 & 10 \end{bmatrix}$. In order to reflect over the y axis and then rotate by 53.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.6 & -0.8 \\ -0.8 & 0.6 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v108)

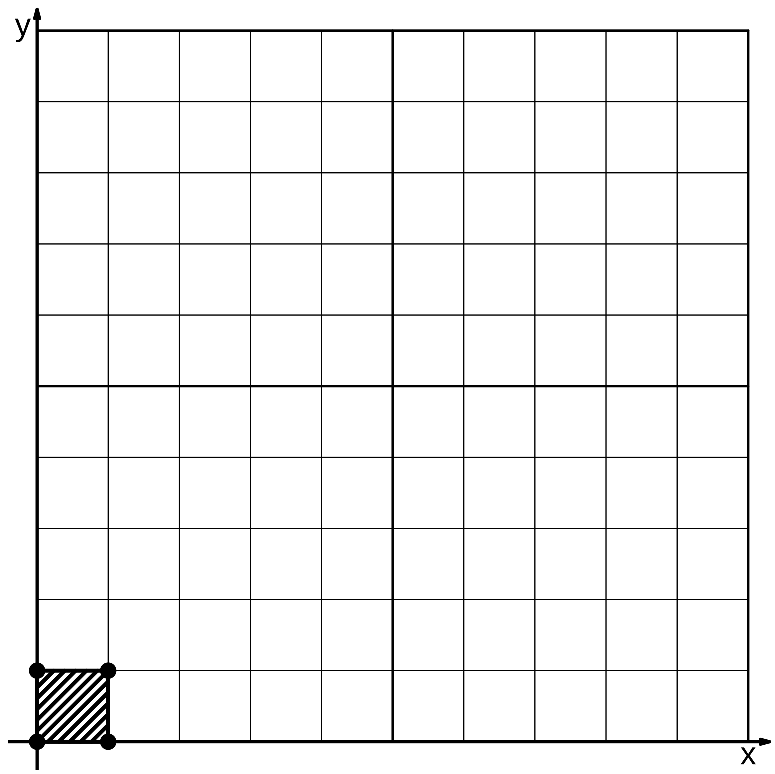
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 3 & 4 \\ 2 & 5 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
3	4				
2	5				

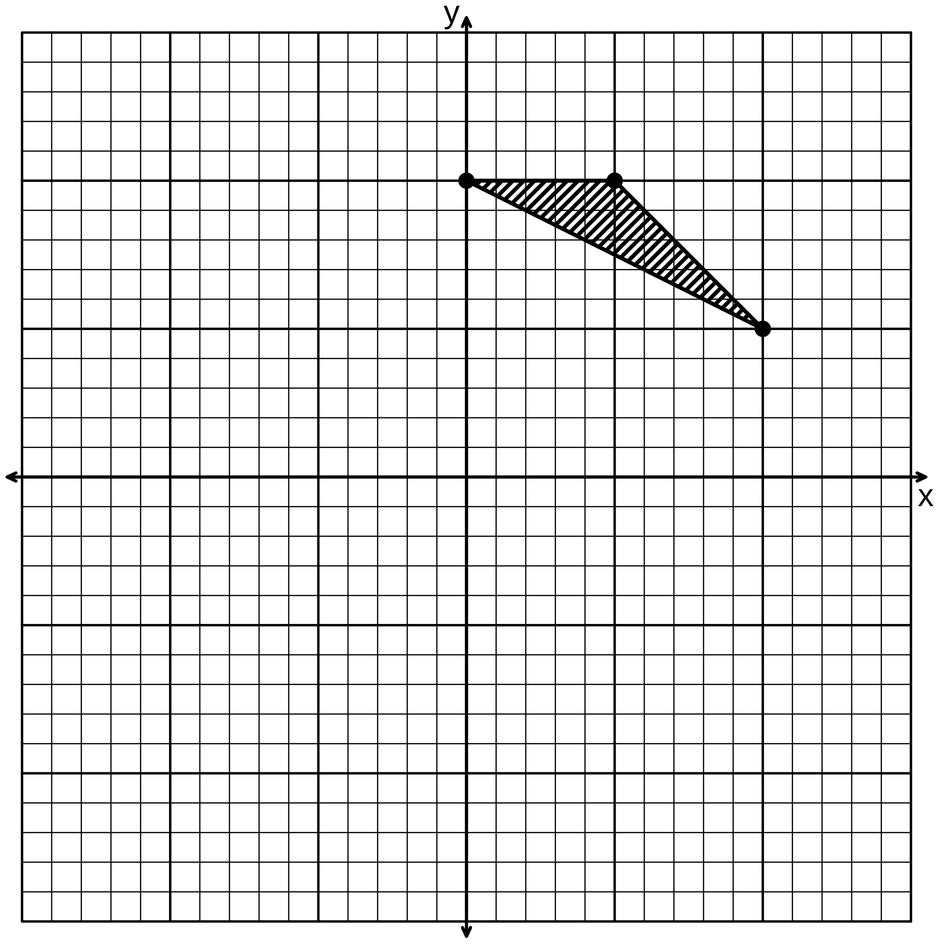


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 5 & 10 & 0 \\ 10 & 5 & 10 \end{bmatrix}$. In order to reflect over the x axis, reflect over the y axis, and then rotate by 323.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.8 & -0.6 \\ 0.6 & -0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v109)

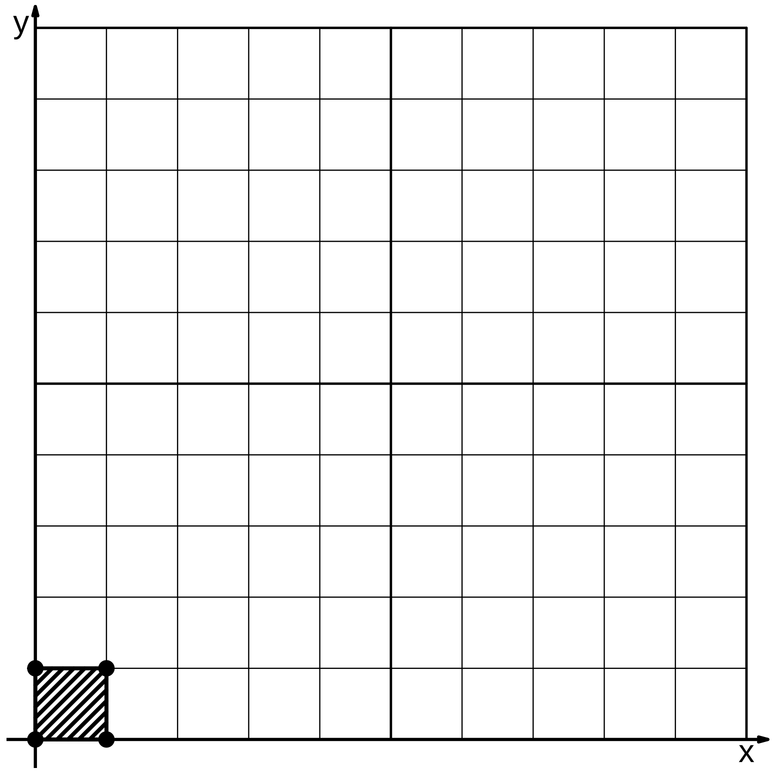
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 8 & 1 \\ 2 & 5 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
8	1				
2	5				

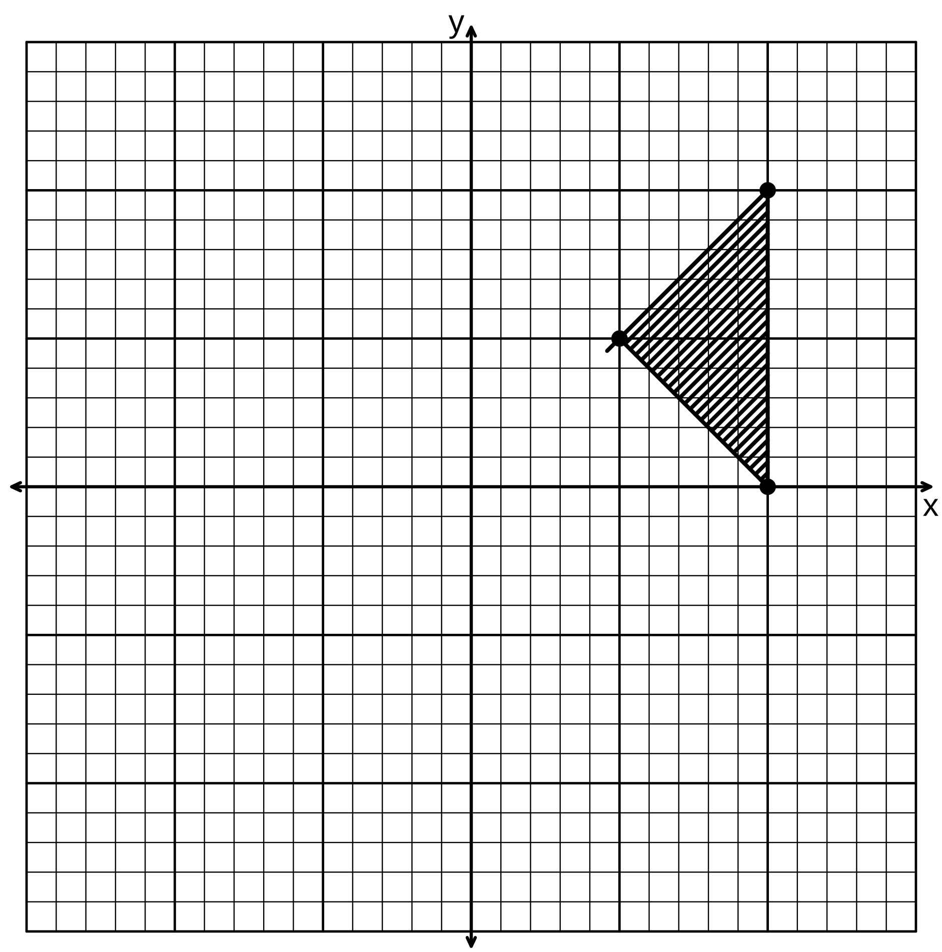


2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 10 & 10 & 5 \\ 10 & 0 & 5 \end{bmatrix}$. In order to reflect over the x axis and then rotate by 233.13° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} -0.6 & -0.8 \\ -0.8 & 0.6 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.



Name: Date:

s19 Matrix Exam (practice v110)

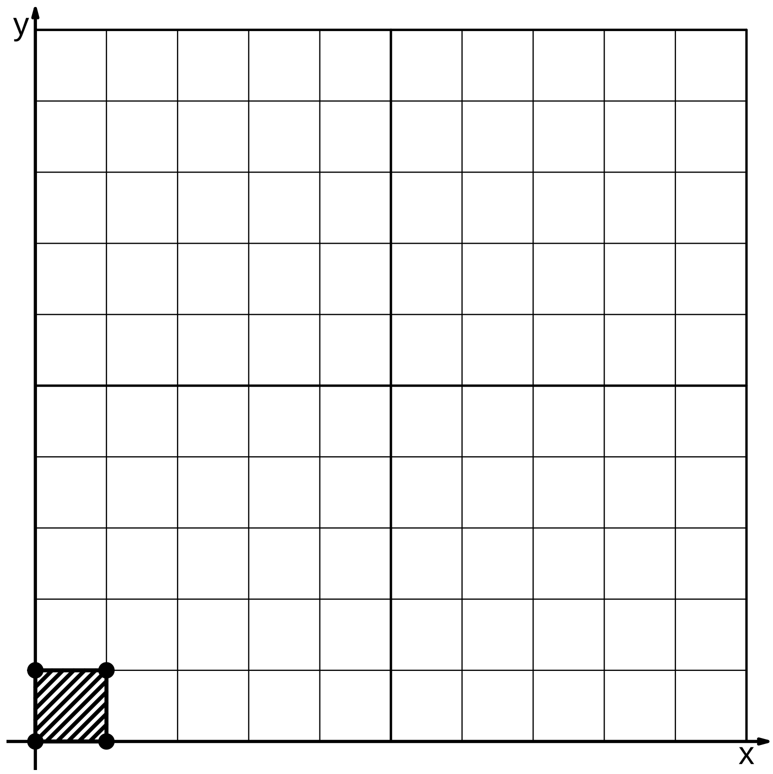
Let the 2×4 matrix U represent four points in the xy-plane (so each column represents a point). When those four points are connected as a convex polygon, matrix U represents a unit square. Also, let the 2×2 matrix L represent a linear transformation.

$$U = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad L = \begin{bmatrix} 3 & 2 \\ 1 & 9 \end{bmatrix}$$

Let matrix $P = L \cdot U$, so P is found by matrix multiplication of L times U. Matrix P also represents 4 points of a polygon. Use the diagram below to calculate the elements of P. Then, draw the polygon represented by matrix P on the xy-plane below. Notice I have already drawn the unit square represented by matrix U.

1. Multiply $L \cdot U$ and draw resulting polygon.

		0	1	1	0
		0	0	1	1
3	2				
1	9				



2. What is the area of the convex polygon represented by matrix P? *Hint: the area equals the absolute value of the determinant of matrix L.*

The triangle shown below is composed of the three points represented by matrix $A = \begin{bmatrix} 0 & 5 & 10 \\ 5 & 5 & 10 \end{bmatrix}$. In order to reflect over the x axis and then rotate by 36.87° counterclockwise we can multiply by the transformation matrix $R = \begin{bmatrix} 0.8 & 0.6 \\ 0.6 & -0.8 \end{bmatrix}$.

3. Calculate the matrix $R \cdot A$.

4. Draw the triangle represented by $R \cdot A$.